

# *Tropical Cyclone Evasion*



NAVAL PACIFIC METEOROLOGY AND OCEANOGRAPHY CENTER, YOKOSUKA

# Overview

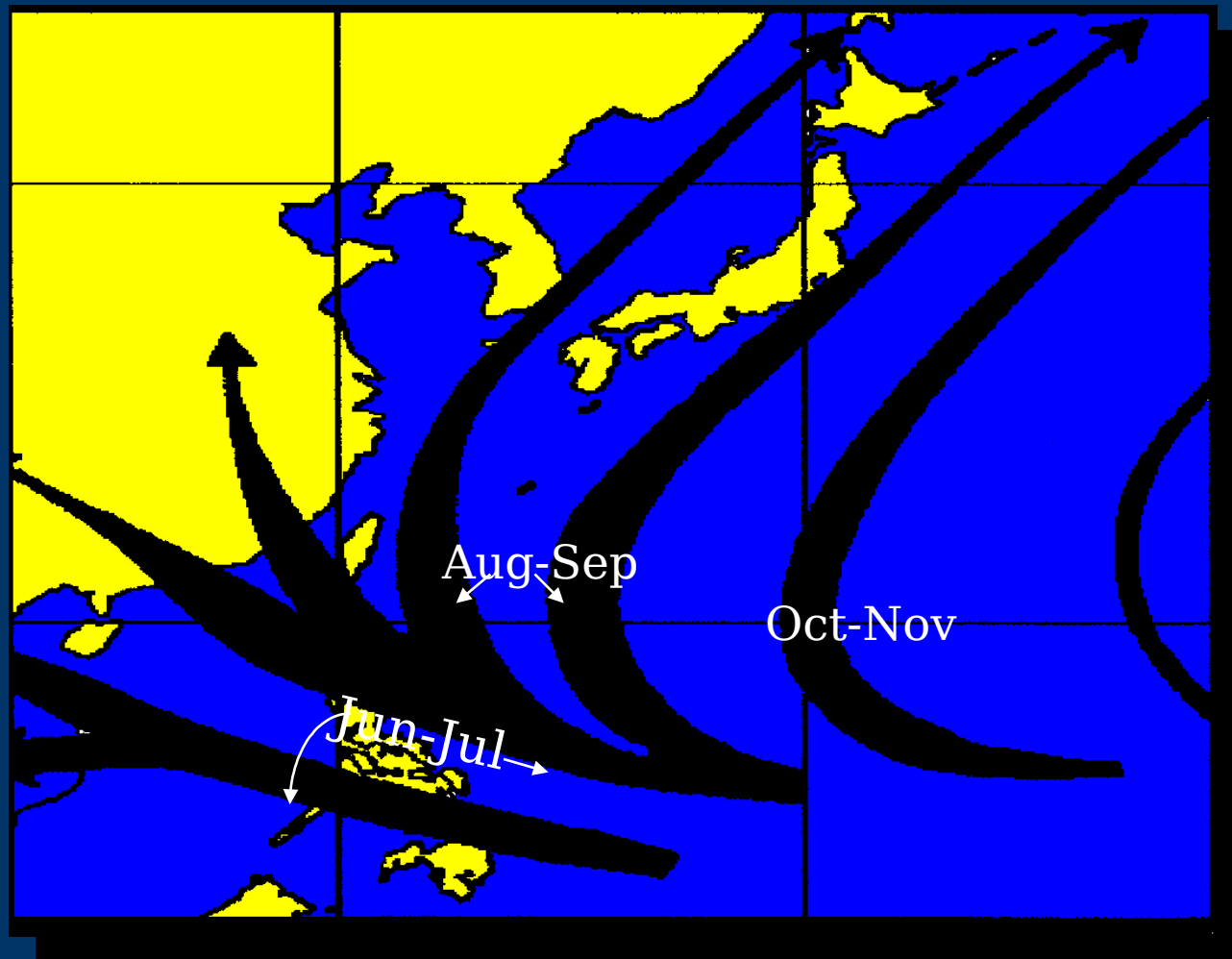
- **WESTPAC CLIMATOLOGY**
- **U.S. NAVY WARNING SYSTEM**
- **TROPICAL CYCLONE DEVELOPMENT**
- **JOINT TYPHOON WARNING CENTER**
- **TYPHOON EVASION**
- **TYPHOON HAVENS**
- **CONDITIONS OF READINESS**
- **REQUIRED REPORTS**



# West Pac Climatology

- **SEASON**- year round; most frequent June through November (August is most active)
- **FORMATION AREA**- Philippine Sea, South China Sea and between 5 and 15 degrees latitude
- **NUMBER**- average 25 tropical cyclones, 18 typhoons, 5 super typhoons per season
- **MOVEMENT**- generally WNW-NE
- **SPEED**- 10 to 15 KTS (may be stationary or accelerate to 50 KTS)

# Average Storm Track for WestPac



# Storms Affecting Yokosuka

- **SEASON - JUNE THROUGH NOVEMBER**

- average of 2 per year pass within 180 NM of Yokosuka and most storms

- are in re-curvature moving NE at 18-35 KTS

- **STORMS PASSING TO THE WEST**

- winds are the strongest and from a southerly direction

- wave action inport is limited, 3-5 feet

- **STORMS PASSING TO THE EAST**

- winds not as strong and from NE

- increased wave action, harbor can reach in excess of 8-10 ft

# U.S. NAVY Warning System

JOINT TYPHOON WARNING CENTER, PEARL HARBOR HI

- TDO is a USN or USAF 0-3 or 0-4
- Issues advisories, TCFA's, TC warnings, prognostic reasoning (GOMM) 808- 474-2320
- Call anytime - ~~(DSN)~~ ~~SECURE~~ 474-2320\*

**\*\*OFFICIAL NAVY FORECAST \*\***

# U.S. NAVY Warning System

## OTSR

- OTSR Duty Officer is a USN E-7 ~ 0-3
- Issues advisories and divert/sortie recommendations

(COMM) 011-81-311-743-

- Call anytime - <sup>8873</sup>(DSN) <sup>8873</sup>243-

<sup>8873</sup>8873\*

**\*\*OFFICIAL NAVY FORECAST \*\***

# Tropical Cyclone Development

## Conditions for Development

- Warm Sea Surface Temp ( $>79$  Deg F)
- Pre-Existing Surface Disturbance
- Minimal Vertical Wind Shear
- Poleward of 5 Deg Latitude



# Life Cycle of a Tropical Storm

## **TROPICAL DISTURBANCE**

area of  
convection 100-  
300 NM in  
diameter which  
has persisted  
more than 24  
hours

## **TROPICAL DEPRESSION**

tropical cyclone  
with winds <34  
KTS,

one closed  
isobar, assigned  
a number

## **TROPICAL STORM**

sustained winds  
34-63KTS  
assigned a  
name

## **TYPHOON**

sustained winds  
64-129 KTS

## **SUPER TYPHOON**

sustained winds  
130 KTS or  
greater

**DISSIPATE**  
over land or  
water

## **EXTRATROPICAL**

system has lost  
tropical  
characteristics  
but will  
continue to be  
threat

# Tropical Cyclone Formations



A satellite image of a tropical cyclone, showing a well-defined eye and spiral cloud bands. The image is used to illustrate the different stages of tropical cyclone formation. Labels with arrows point to specific features: 'TROPICAL STORM 34-63 KTS' points to the outer cloud bands, 'HURRICANE E/TYPHOON >63 KTS' points to the eye, 'TROPICAL DEPRESSION <34 KTS' points to a less organized area, and 'TROPICAL DISTURBANCE' points to a small, developing cloud cluster.

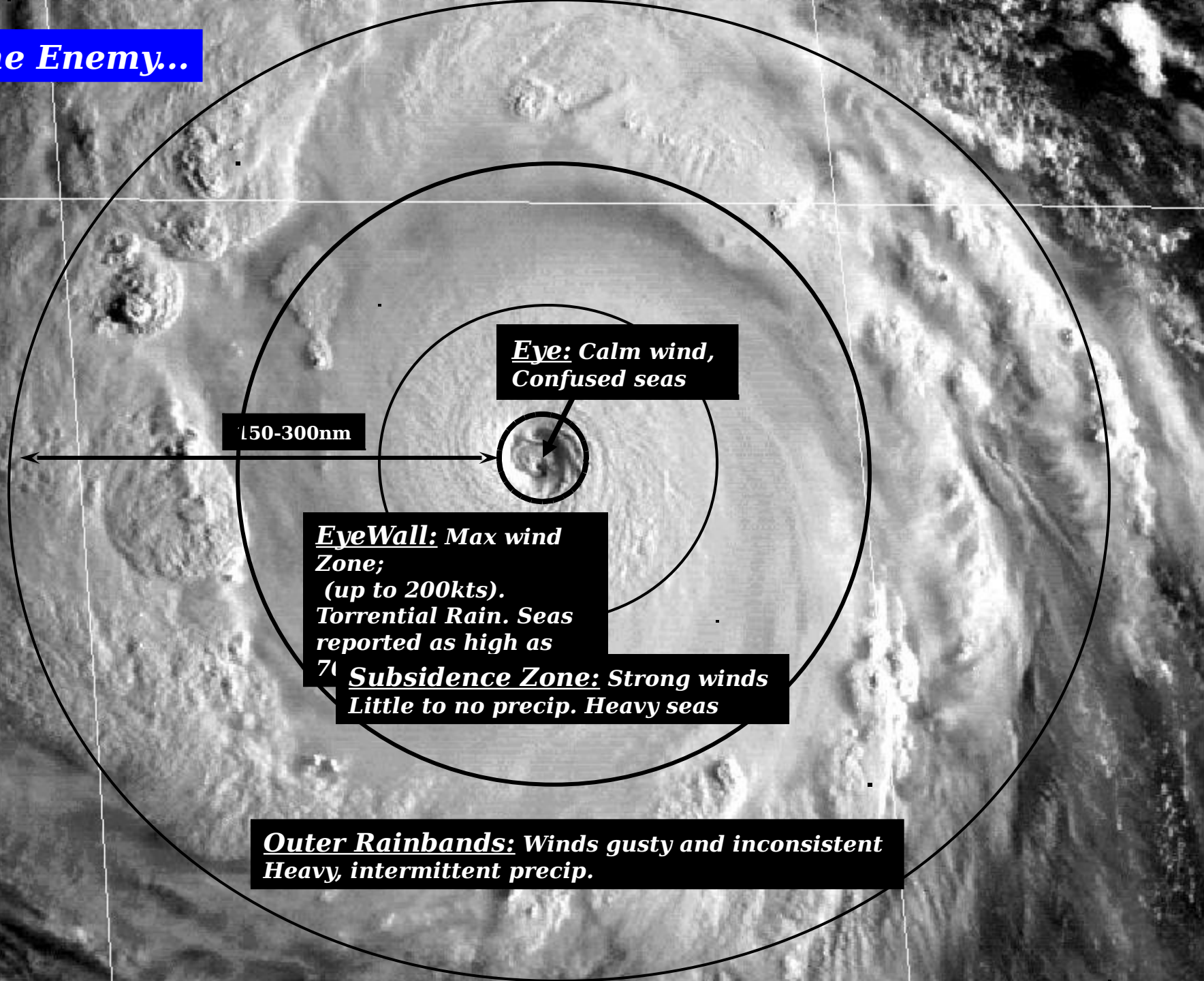
**TROPICAL STORM**  
34-63 KTS

**TROPICAL DEPRESSION**  
<34 KTS

**HURRICANE  
E/TYPHOON**  
N  
>63 KTS

**TROPICAL DISTURBANCE**

## *The Enemy...*



**Eye:** Calm wind,  
Confused seas

150-300nm

**EyeWall:** Max wind  
Zone;  
(up to 200kts).  
Torrential Rain. Seas  
reported as high as  
7'

**Subsidence Zone:** Strong winds  
Little to no precip. Heavy seas

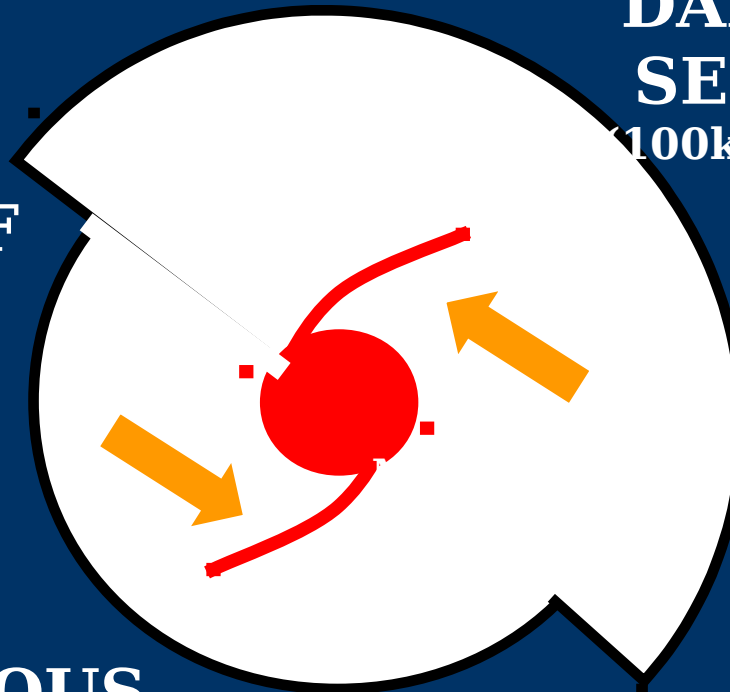
**Outer Rainbands:** Winds gusty and inconsistent  
Heavy, intermittent precip.

# Some Definitions



**DIRECTION OF  
MOVEMENT  
(NW@12kt)**

**LESS DANGEROUS  
SEMICIRCLE  
(100kt - 12kt = 88kt)**



**DANGEROUS  
SEMICIRCLE  
(100kt + 12kt = 112kt)**

**RADIUS OF  
35 KT WINDS**

**COUNTER-CLOCKWISE  
ROTATION OF WIND  
ABOUT CYCLONE CENTER**

# Significant Tropical Weather Advisory

- Issued daily at **0600Z**
- Lists all tropical disturbances with a closed circulation persisting more than **24 hrs**
- Disturbances referred to as suspect areas with a subjective rating of **POOR, FAIR, OR GOOD** for further development

ABPW10 PGTW 270600 MSGID/GENADMIN/NAVPACMETOCCEN PEARL HARBOR HI/JTWC// SUBJ/SIGNIFICANT TROPICAL WEATHER ADVISORY FOR THE WESTERN AND/ SOUTH PACIFIC OCEAN/270600Z/280600ZOCT2002//  
REF/A/RMG/NAVPACMETOCCEN PEARL HARBOR HI/270151Z OCT 02/ AMPN/REF A IS A TROPICAL CYCLONE WARNING.// RMKS/ 1. WESTERN NORTH PACIFIC AREA (180 TO MALAY PENINSULA): A. TROPICAL CYCLONE SUMMARY: (1) AT 270000Z9, TROPICAL DEPRESSION (TD) 29W WAS LOCATED NEAR 19.1N1 160.7E4, APPROXIMATELY 330 NM WEST OF WAKE ISLAND TRACKING WEST-NORTHWESTWARD AT 08 KNOTS. MAXIMUM SUSTAINED WINDS WERE 30 KNOTS GUSTING TO 40 KNOTS. SEE REF A (WTPN31 PGTW 270300) FOR FURTHER DETAILS. (2) NO OTHER TROPICAL CYCLONES. B. TROPICAL DISTURBANCE SUMMARY: (1) THE AREA OF CONVECTION PREVIOUSLY LOCATED NEAR 17.8N6 162.6E5 IS NOW THE SUBJECT OF A TROPICAL CYCLONE WARNING. SEE PARA 1.A.1 FOR FURTHER DETAILS. (2) NO OTHER SUSPECT AREAS. 2. SOUTH PACIFIC AREA (WEST COAST OF SOUTH AMERICA TO 135 EAST): A. TROPICAL CYCLONE SUMMARY: NONE. B. TROPICAL DISTURBANCE SUMMARY: NONE. FORECAST TEAM: LEEJOICE/HEATH/DUKES/ANDERSON//

# JTWC Pearl Harbor Tropical Cyclone Support

## Tropical Cyclone Formation Alerts

“Heads up” that warnings may be forthcoming, usually 12 - 24 hours prior to commencement of first warning of new system.

**DOES NOT EXPIRE.** Valid for 24 Hours, reissued, upgraded, or canceled.

## Tropical Cyclone Warnings

Issued every 6 hours, every **12 Hours in Southern Hemisphere.**

Forecast position and intensity out to 72 hours (6 positions).



# Tropical Cyclone Formation Alert

- Issued when formation of a tropical cyclone is likely within **24 hrs**

- Valid for 24 hrs, but **does not expire**

Mobile Environmental Team, Yokosuka

WTPN21 PGTW 221200

SUBJ/TROPICAL CYCLONE FORMATION ALERT 221153Z  
SEP 94 //

RMKS/1. FORMATION OF A SIGNIFICANT TROPICAL CYCLONE IS POSSIBLE WITHIN 120 NM EITHER SIDE OF A LINE FROM 11.3N5 161.9E7 TO 16.3N0 154.8E8 WITHIN THE NEXT 06 TO 24 HOURS.

AVAILABLE DATA DOES NOT JUSTIFY ISSUANCE OF NUMBERED TROPICAL CYCLONE WARNINGS AT THIS TIME. WINDS IN THE AREA ARE ESTIMATED TO BE 015 TO 020 KNOTS. METSAT IMAGERY AT 220930Z INDICATES A CIRCULATION CENTER IS LOCATED NEAR 11.8N0 161.1E9. THE SYSTEM IS MOVING NORTHWESTWARD AT 15 KNOTS.

2. REMARKS: SATELLITE IMAGERY INDICATES THE CIRCULATION CENTER MENTIONED ABOVE IS IN A BROAD AREA OF CONVECTION WHERE ENVIRONMENTAL CONDITIONS ARE FAVORABLE FOR FUTURE DEVELOPMENT. THE POTENTIAL FOR SIGNIFICANT TROPICAL CYCLONE DEVELOPMENT IS GOOD.

3. THIS ALERT VALID UNTIL 231200Z8. //

# Tropical Cyclone Warning

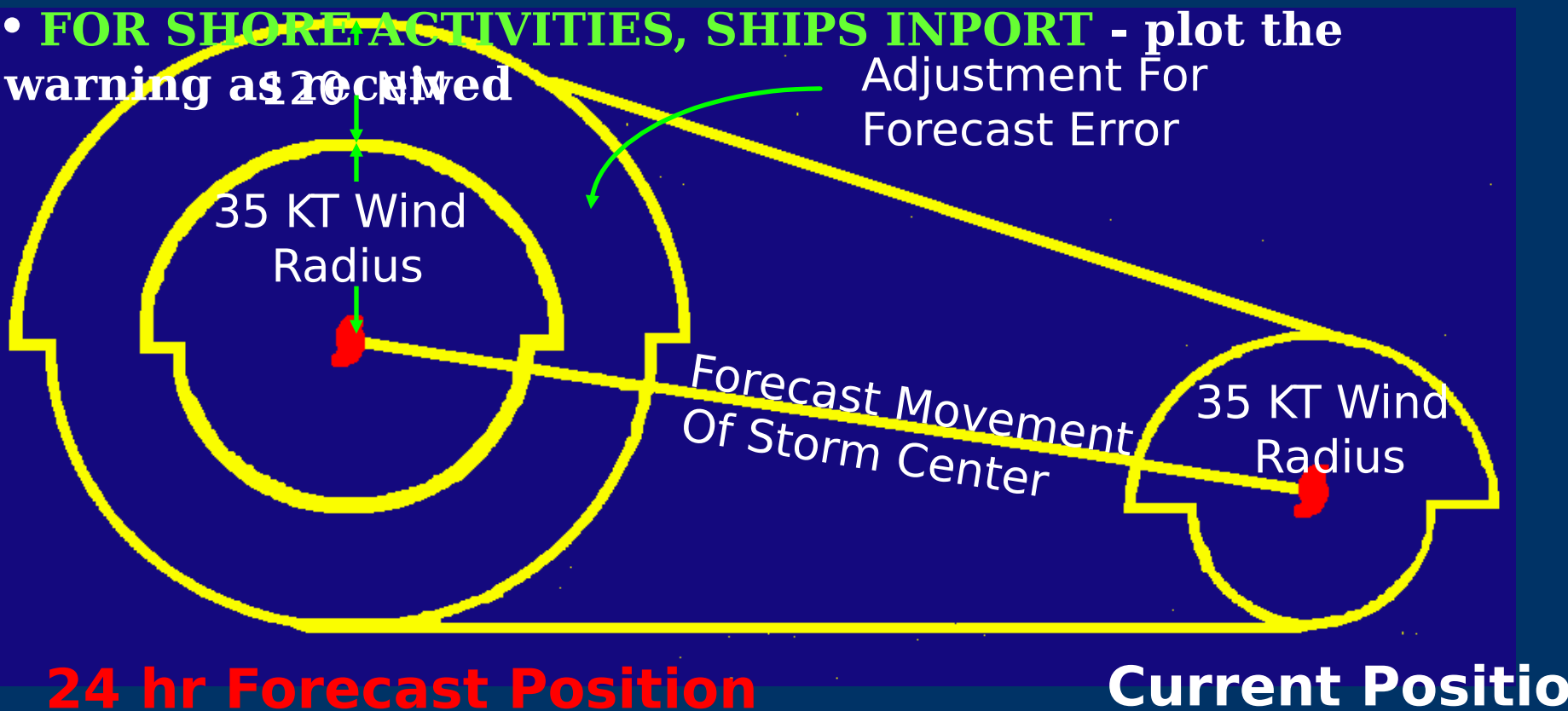
- Issued every **6 hours**
- Includes a **72 hour forecast**
- valid at synoptic times (**00, 06, 12, and 18Z**)

```
WTPN31 PGTW 092100
1. TYPHOON 07W (NOGURI) WARNING NR 016
01 ACTIVE TROPICAL CYCLONE IN NORTHWESTPAC
MAX SUSTAINED WINDS BASED ON ONE-MINUTE AVERAGE
---
WARNING POSITION:
091800Z8 --- NEAR 24.7N3 125.2E0
MOVEMENT PAST SIX HOURS - 010 DEGREES AT 09 KTS
POSITION ACCURATE TO WITHIN 060 NM
POSITION BASED ON CENTER LOCATED BY SATELLITE
PRESENT WIND DISTRIBUTION:
MAX SUSTAINED WINDS - 085 KT, GUSTS 105 KT
RADIUS OF 050 KT WINDS - 040 NM
RADIUS OF 034 KT WINDS - 070 NM NORTHEAST QUADRANT
                                070 NM SOUTHEAST QUADRANT
                                060 NM SOUTHWEST QUADRANT
                                070 NM NORTHWEST QUADRANT
REPEAT POSIT: 24.7N3 125.2E0
---
FORECASTS:
12 HRS, VALID AT:
100600Z7 --- 27.0N9 126.4E3
MAX SUSTAINED WINDS - 080 KT, GUSTS 100 KT
RADIUS OF 050 KT WINDS - 045 NM
RADIUS OF 034 KT WINDS - 085 NM NORTHEAST QUADRANT
                                090 NM SOUTHEAST QUADRANT
                                OVER WATER
                                070 NM SOUTHWEST QUADRANT
                                065 NM NORTHWEST QUADRANT
```

# Plotting the Danger Area

- **FOR SHIPS AT SEA** - add 120NM to the 24 hour 35 KT wind radius

- **FOR SHORE ACTIVITIES, SHIPS INPORT** - plot the warning as received



# Prognostic Reasoning

- Issued twice a day for **00Z** and **12Z**
- Discusses current situation, intensity, wind radii, forecast reasoning, and alternate scenarios

WDPN31 PGTW 290300

1. FOR METEOROLOGISTS.

2. PROGNOSTIC REASONING FOR 290000Z1 TO 301200Z6 OCT 02.

A. TROPICAL STORM (TS) 29W (MAYSACK), LOCATED APPROXIMATELY 1000 NM EAST OF MIDWAY ISLAND, HAS TRACKED NORTHEASTWARD AT 24 KNOTS DURING THE PAST SIX HOURS. THE WARNING POSITION IS BASED ON 282330Z8 VISIBLE AND ENHANCED INFRARED SATELLITE IMAGERY. THE WARNING INTENSITY IS BASED ON SATELLITE CURRENT INTENSITY ESTIMATES OF 55 KNOTS. ANIMATED WATER VAPOR IMAGERY INDICATES THAT A MAJOR SHORTWAVE TROUGH IS APPROACHING FROM THE WEST AND INCREASING VERTICAL WIND SHEAR IN THE REGION.

B. TS 29W IS EXPECTED TO ACCELERATE NORTHEASTWARD ALONG THE LOW TO MID-LEVEL SUBTROPICAL RIDGE AS A MID-LAT TROUGH PROPAGATES EASTWARD GENERATING INCREASING WEST-SOUTHWESTERLY FLOW. THE STEERING FLOW ASSOCIATED WITH THE TROUGH IS EXPECTED TO INFLUENCE A MORE ZONAL TRACK AND ADDITIONAL FORWARD SPEED. THE DYNAMIC AIDS, NOGAPS, GFDN, AND AVN, ARE IN GOOD AGREEMENT. THE JAPANESE GLOBAL (JGSM) AND THE UKMET OFFICE MODEL (EGRR) WEAKEN TS 29W AND ARE NOT TRACKING THE SYSTEM THROUGH THE FORECAST PERIOD. OUR FORECAST IS BASED ON A BLEND OF THE FORMER CLUSTER OF DYNAMIC AIDS.

C. TS 29W IS NORTH OF THE UPPER LEVEL RIDGE AXIS AND TRACKING OVER COOLER SEA TEMPS. THE APPROACHING MID-LAT TROUGH IS BRINGING INCREASING VERTICAL WIND SHEAR INTO THE REGION. TS 29W IS EXPECTED TO WEAKEN SLIGHTLY IN THIS ENVIRONMENT AS IT UNDERGOES EXTRATROPICAL TRANSITION.

D. INITIAL WIND RADII ARE BASED ON A 281857Z1 QUIKSCAT PASS. FORECAST WIND RADII ARE BASED ON CLIMATOLOGY FOR A SYSTEM BECOMING EXTRATROPICAL.

3. FORECAST TEAM: SMITH/DANIEL/RONSSE/SCHAEFER/EDBERG//



# NAVAL PACIFIC METEOROLOGY AND OCEANOGRAPHY CENTER

Yokosuka, Japan



**Operational Website**

**Current Conditions and Web Status**

[Website Update Information](#)

## Support Areas

[Typhoon Support](#)

[Yokosuka Local Area](#)

[Western Pacific](#)

[Indian Ocean](#)

[Australia](#)

[Marianas Islands](#)

## Operation / Exercise Support Areas

[Full Accounting](#)

[Iwo Jima Support](#)

[Satellite Archives](#)

[WMD](#)

## Reference Information

[NPMOC Yokosuka AOR Climatology](#)

[Publications](#)

### Current Warnings / Advisories:

There are no local warnings at this time.

### Tropical Conditions of Readiness:

Base	COR Condition	Storm Number	Time Set	Warning Information	
Yokosuka Local Area	All Clear				
Kanto Plain	All Clear				
Sasebo	All Clear				
Iwakuni	COR 4	TC Seasonal			
Misawa	All Clear				
Okinawa	COR 4	TC Seasonal			
Guam	COR 4	TC Seasonal			
Saipan	COR 4	TC Seasonal			
Iwo Jima	All Clear				

### Current Conditions:

Time:	1508 Local
Visibility:	8.7 NM
Wind:	000 @ 00 KT
Temp/Dewpt:	60.8 ° F / 30.2 ° F

### Web Status:

ASOS dewpoint data incorrect; currently under maintenance. Due to antenna problems, some satellite data will be missed.

[Click here for the 5 day forecast](#)



# CENTER Yokosuka, Japan



## Operational Website Typhoon Support

[Website Update Information](#)

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- [Publications](#)

### Departments

- [MET/Fleet Liaison](#)
- [Training Department](#)

### Typhoon Links

- [Joint Typhoon Warning Center](#)
- [NRL-Monterey TC Page](#)
- [RSMC Tokyo - Typhoon Center Tropical Cyclone Advisory \(JMA/English\)](#)
- [Japanese Typhoon Warnings \(IMOC/Japanese\)](#)
- [U of Wisconsin TC Page](#)

### Conditions of Readiness

- [Check Western Pacific COR's](#)

### Altimetry

- [00Z Northern Pacific Pass](#)
- [00Z Southern Pacific Pass](#)
- [00Z Indian Ocean Pass](#)
- [06Z Northern Pacific Pass](#)
- [06Z Southern Pacific Pass](#)
- [06Z Indian Ocean Pass](#)
- [12Z Northern Pacific Pass](#)
- [12Z Southern Pacific Pass](#)
- [12Z Indian Ocean Pass](#)
- [18Z Northern Pacific Pass](#)
- [18Z Southern Pacific Pass](#)
- [18Z Indian Ocean Pass](#)
- [Altimetry Data From NAVO](#)

Due to antennae damage please go to the following link  
for current satellite imagery.

[NPMOC/JTWC Hawaii](#)

### Satellite Imagery

- |                                                                                  |                           |
|----------------------------------------------------------------------------------|---------------------------|
| <a href="#">Westpac GMS IR</a><br>Last updated 06:03 October 31, 2002            | <a href="#">Play Loop</a> |
| <a href="#">Westpac GMS Enhanced IR</a><br>Last updated 06:03 October 31, 2002   | <a href="#">Play Loop</a> |
| <a href="#">Westpac GMS Water Vapor</a><br>Last updated 06:03 October 31, 2002   | <a href="#">Play Loop</a> |
| <a href="#">Westpac GMS Visual</a><br>Last updated 06:03 October 31, 2002        | <a href="#">Play Loop</a> |
| <a href="#">Australia GMS IR</a><br>Last updated 06:03 October 31, 2002          | <a href="#">Play Loop</a> |
| <a href="#">Australia GMS Enhanced IR</a><br>Last updated 06:03 October 31, 2002 | <a href="#">Play Loop</a> |
| <a href="#">Australia GMS Water Vapor</a><br>Last updated 06:03 October 31, 2002 | <a href="#">Play Loop</a> |
| <a href="#">Australia GMS Visual</a><br>Last updated 06:03 October 31, 2002      | <a href="#">Play Loop</a> |
| <a href="#">IO Met5 IR</a><br>Last updated 06:03 October 31, 2002                | <a href="#">Play Loop</a> |
| <a href="#">IO Met5 Visual</a><br>Last updated 06:03 October 31, 2002            | <a href="#">Play Loop</a> |
| <a href="#">IO Met5 Water Vapor</a><br>Last updated 01:03 October 31, 2002       | <a href="#">Play Loop</a> |
| <a href="#">Full Disk GMS IR</a><br>Last updated 06:03 October 31, 2002          | <a href="#">Play Loop</a> |
| <a href="#">Full Disk GMS Water Vapor</a><br>Last updated 06:03 October 31, 2002 | <a href="#">Play Loop</a> |
| <a href="#">Full Disk GMS Visual</a><br>Last updated 06:03 October 31, 2002      | <a href="#">Play Loop</a> |

### Scatterometry

- [Ascending Pass](#)
- [Descending Pass](#)
- [Previous Days](#)
- [QUIKSCAT](#)





## Joint Typhoon Warning Center Products

[Mission Statement](#)

[Product Usage](#)

[Statistics and Climatology](#) **NEW**

[Warning Graphic Legend](#)

[TC NAMES](#)

[Satellite Imagery](#)

[Graphical JTWC Page](#)

[Graphical ABIO/ABPW Page](#)

[Global Model Seasonal  
Performance](#)

[ATCR Archive](#)

[Best Tracks](#)

Director, JTWC  
email: [dirjtwc@npmoc.navy.mil](mailto:dirjtwc@npmoc.navy.mil)

[NPMOC Site](#)

### Current Western Pacific / Indian Ocean Tropical Systems

- **No Tropical Cyclone Warnings.**

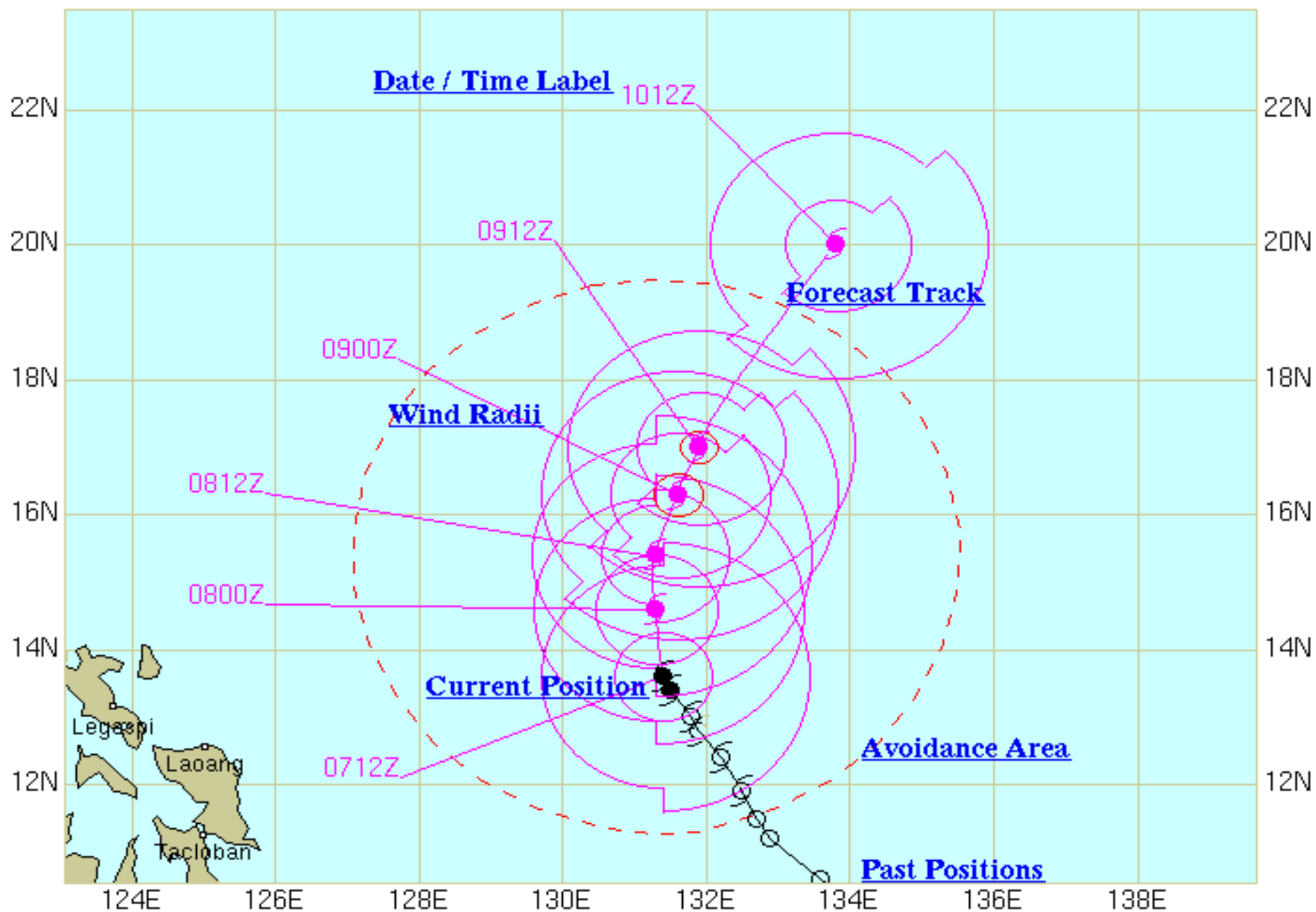
### Current Eastern/Central Pacific Tropical Systems

- Tropical Storm 03C (Huko) Warning #25 [\[text\]](#)
  - Graphic [\[.GIF~15K\]](#)
  - IR Satellite Imagery [\[.JPG~120K\]](#)
  - JMV 3.0 Data [\[file\]](#)
  - Prognostic Reasoning [\[text\]](#)
- Tropical Depression 15E (Lowell) Warning #33 [\[text\]](#)
  - Graphic [\[.GIF~15K\]](#)
  - IR Satellite Imagery [\[.JPG~120K\]](#)
  - JMV 3.0 Data [\[file\]](#)
  - Prognostic Reasoning [\[text\]](#)

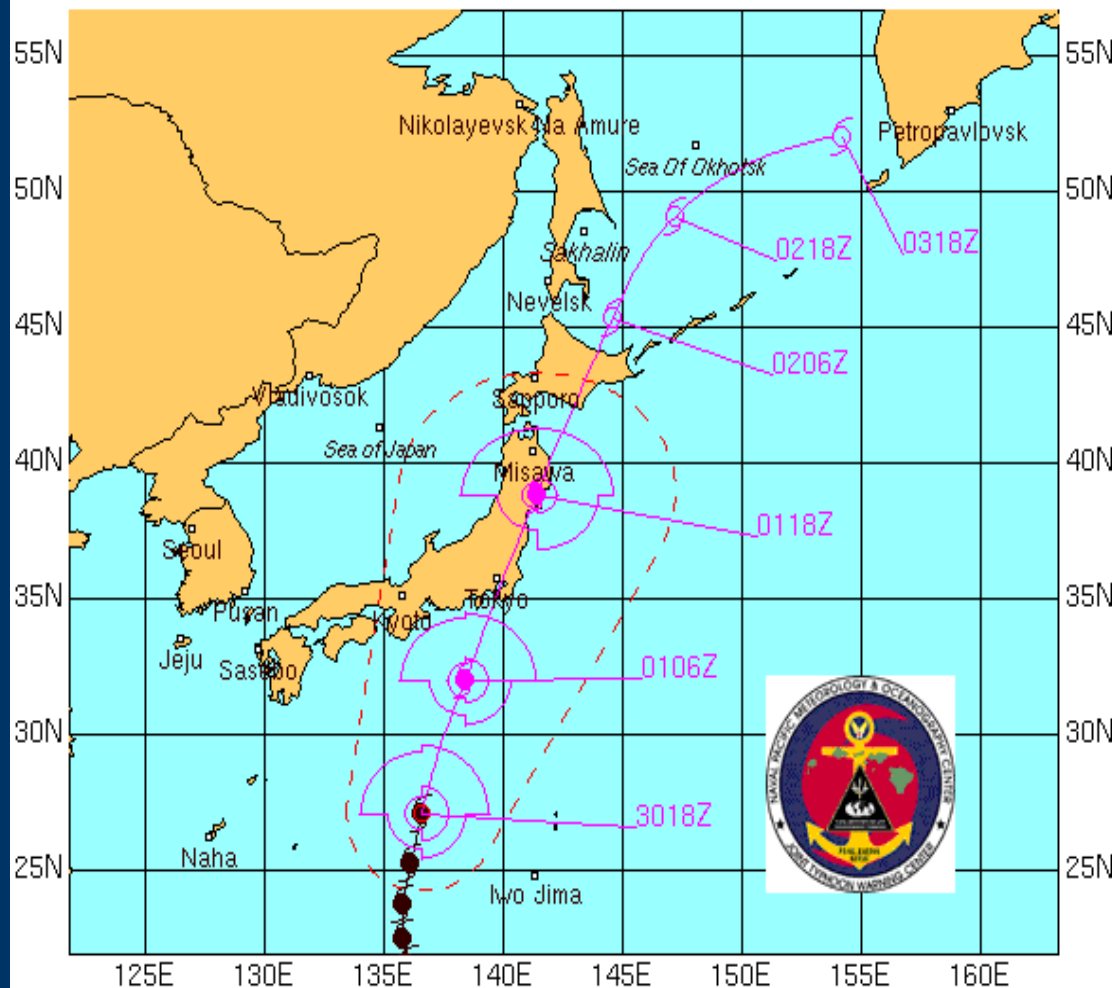
### Current Bulletins

- **ABPW Reissued** (Western and South Pacific Significant Tropical Weather Advisory)
  - Western Pacific
    - Infrared Satellite Imagery [\[.JPG~120K\]](#)
    - Visible Satellite Imagery [\[.JPG~120K\]](#)
  - South Pacific
    - Infrared Satellite Imagery [\[.JPG~120K\]](#)
- **ABPE** (Eastern North Pacific Significant Tropical Weather Advisory)
  - Eastern Pacific
    - Infrared Satellite Imagery [\[.JPG~120K\]](#)
    - Visible Satellite Imagery [\[.JPG~120K\]](#)
- **ABIO** (Indian Ocean Significant Tropical Weather Advisory)

# Warning Graphic Legend



# Tropical Cyclone Warning



TYPHOON 25W (HIGOS) WARNING #19  
 301800Z POSIT: NEAR 27.1N 136.6E  
 MOVING 015 DEGREES TRUE AT 20 KNOTS  
 MAXIMUM SEAS: 35 FEET  
 3018Z, WINDS 110KTS, GUSTS TO 135KTS  
 0106Z, WINDS 090KTS, GUSTS TO 110KTS  
 0118Z, WINDS 075KTS, GUSTS TO 090KTS  
 0206Z, WINDS 055KTS, GUSTS TO 070KTS  
 0218Z, WINDS 045KTS, GUSTS TO 055KTS  
 0318Z, WINDS 040KTS, GUSTS TO 050KTS

○ TROPICAL DEPRESSION  
 6 TROPICAL STORM  
 ● TYPHOON  
 PAST CYCLONE POSITS SHOWN EVERY SIX HOURS.  
 FORECAST CYCLONE POSITIONS AS LABELED.  
 DASHED LINE SHOWS USN SHIP AVOIDANCE AREA.

CPA TO:	NM	DTG
ATSUGI	23	01/12Z
CAMP_FUJI	73	01/11Z
CAMP_ZAMA	23	01/12Z
MISAWA	44	01/20Z
NARITA AIRPORT	20	01/13Z
YOKOSUKA	9	01/12Z
YOKOTA_AB	29	01/12Z



# Tropical Cyclone Evasion (OPORD 201)

- There is no substitute for distance.
- Standard rules for avoiding tropical cyclones (N.H.):
  - On the track of a tropical cyclone
  - In the less dangerous semi-circle
  - In the dangerous semi-circle

# Maneuvering Considerations

- Seas on the dangerous semicircle of the storm may be up to 50 percent higher than seas on the navigable semicircle.

These high seas spread out ahead of the storm and may reduce SOA.

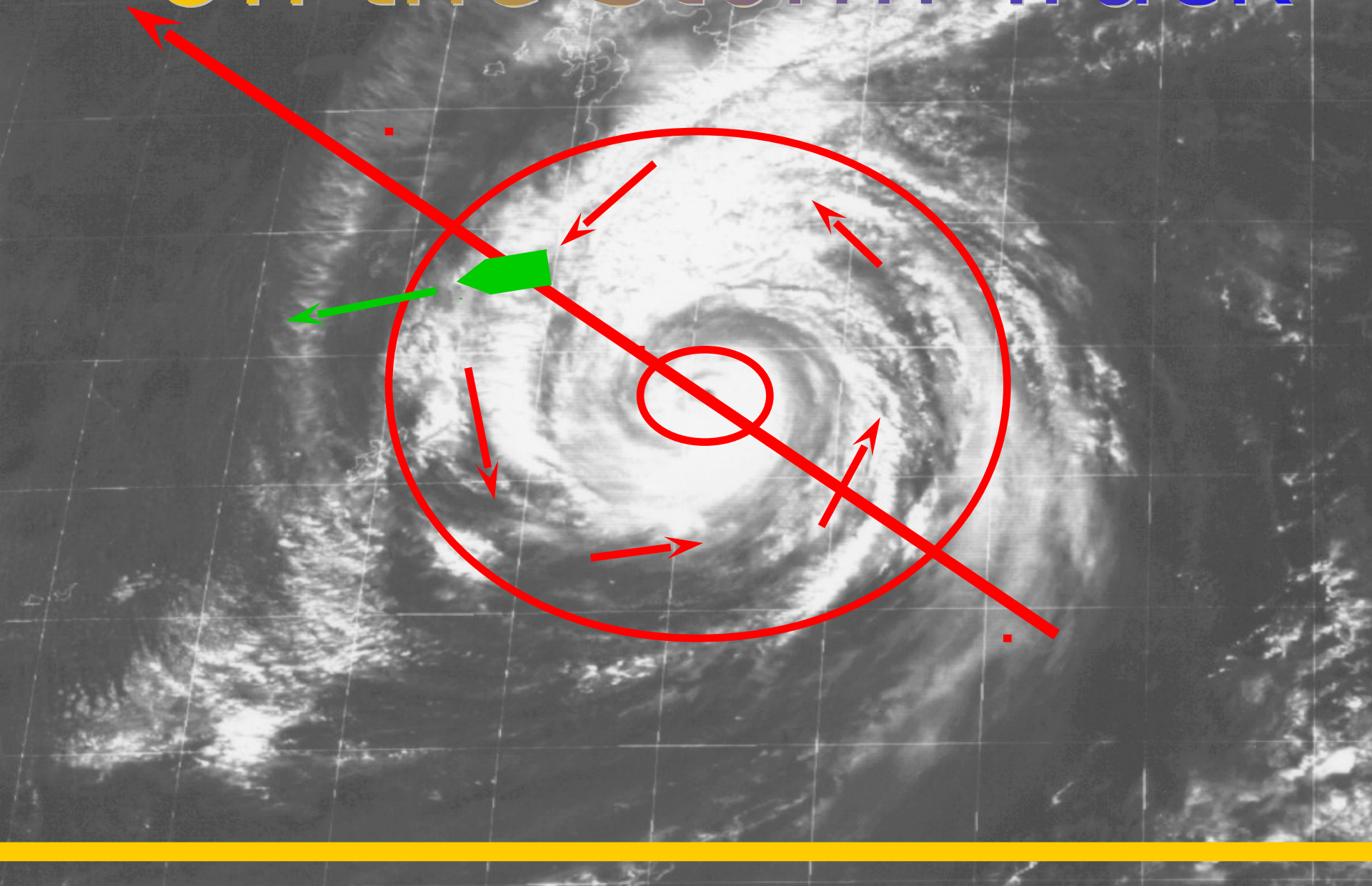
- Winds to the north and east of a northern pacific typhoon frequently remain at gale force hundreds of miles away from the storm center as the storm approaches any mid-latitude high pressure system.

# Evasion on the Storm Track

- Bring the wind to the starboard quarter (160 relative) and maintain course.
- If wind direction stays the same or veers (turns clockwise) slowly, ship is still in the path of the storm.
- When the wind backs (turns counterclockwise) 15 degrees, ship is entering less dangerous semi-circle.



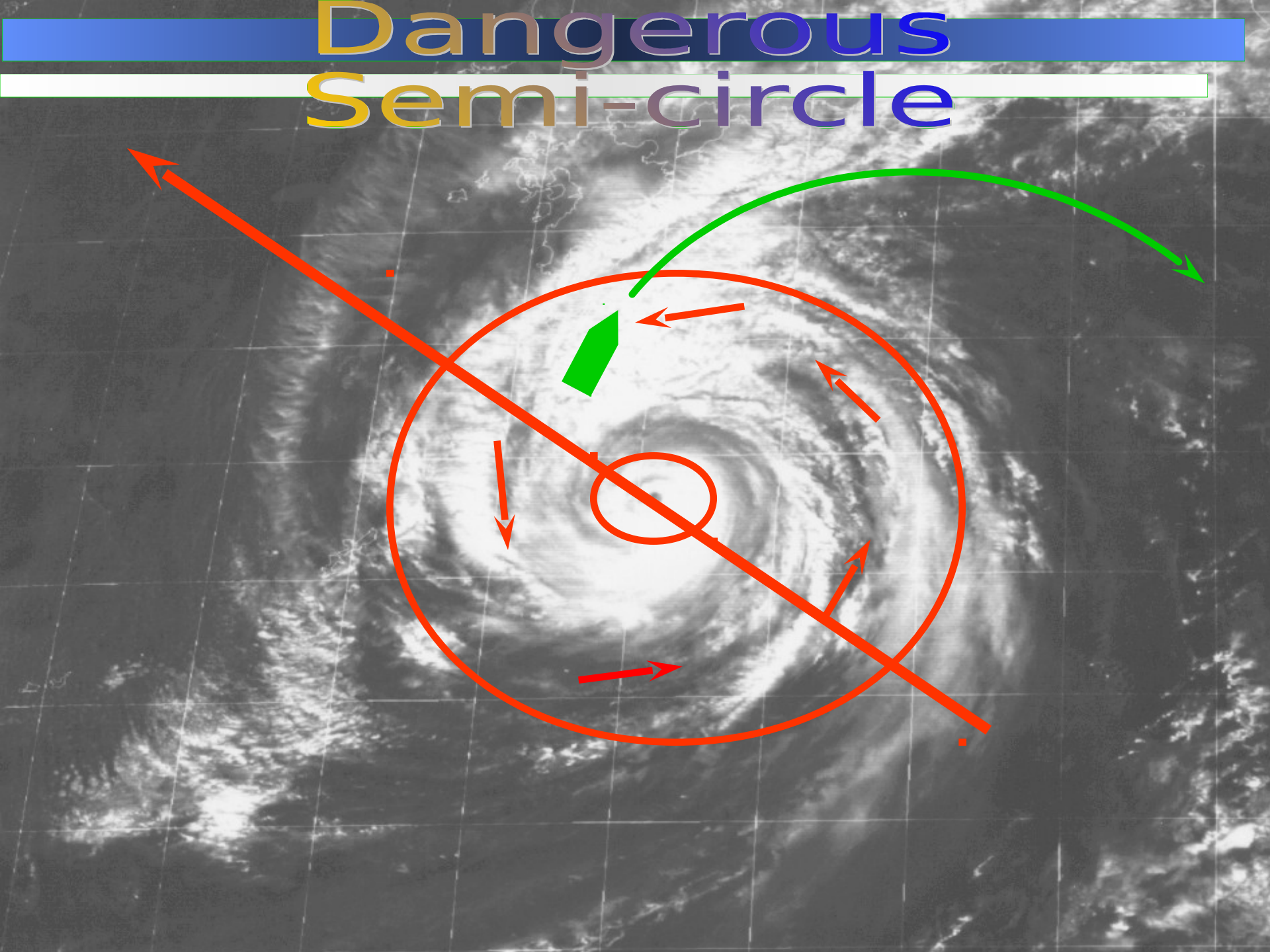
# On the Storm Track



# Evasion in the Dangerous Semi-circle

- Bring the wind on the starboard bow (045 relative).
- Make as much headway as possible.
- If the wind veers (turns clockwise), keep changing course to hold the wind on the starboard bow.
- The tropical cyclone will pass astern.

# Dangerous Semi-circle



# Evasion in the Less Dangerous Semi-circle

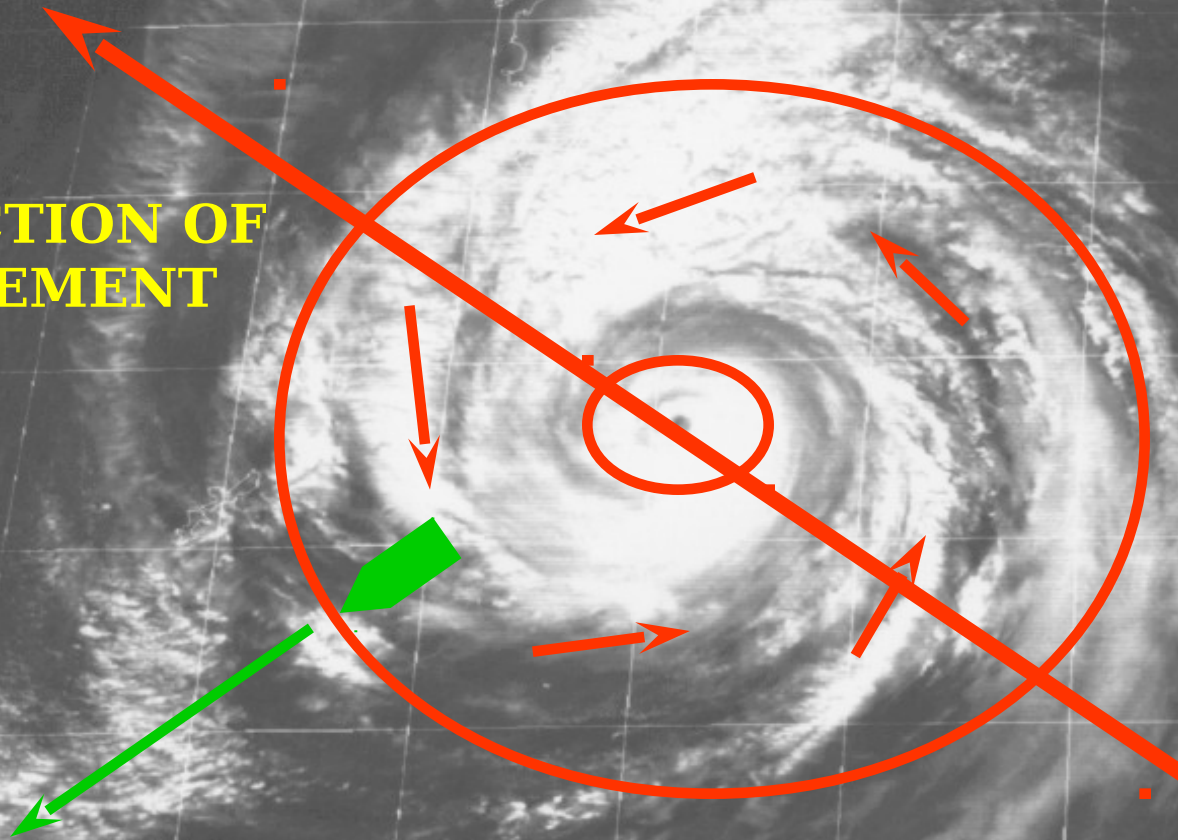
- Bring the wind on the starboard quarter (135 relative) and hold it there.
- Make as much headway as possible.
- If the wind backs (turns counterclockwise), the ship is in the less dangerous semi-circle.
- The tropical cyclone will pass astern.

**Note:** If the wind veers, the ship is in the dangerous semi-circle.



# Less Dangerous Semi-circle

**DIRECTION OF  
MOVEMENT**



**Less Dangerous  
Semi-circle**

# Crossing the "T"



Just say "no"!



# TYPHOON EVASION

## Warning Signs

- **HEAVY SWELLS WITH A LONG PERIOD (15-30SEC)**
  - can occur hundreds of miles ahead of storm
  - will arrive from general direction storm bears
- **PRESSURE DROPS 3.5MB (0.1 INS) IN 24 HRS**
  - large pressure changes in tropics are unusual
  - steadily falling pressure signals trouble
- **WINDS > 25 KNOTS OR ANY WESTERLY WIND**
  - NE trades usually blow at 10-20 knots
- **INCREASING CIRRUS LOWERING TO ALTOSTRATUS**
  - cirrus arrives about 24 hours ahead of storm
  - steady rain begins with altostratus

# Typhoon Havens

## GUAM

APRA HARBOR - **POOR**

## CHINA

HONG KONG - **POOR**

## JAPAN

SASEBO - **GOOD**

YOKOSUKA - **GOOD**

IWAKUNI - **MARGINAL**

OKINAWA - **POOR**

NUMAZU OPERA - **POOR**

## KOREA

INCHON - **POOR**

PUSAN - **POOR**

CHINHAE - **MARGINAL**

# Conditions of Readiness

## TROPICAL CYCLONE CONDITIONS OF READINESS (TCCOR) are set by:

### **COMUSFORJAPAN (Kanto Plain)**

- \* Yokota
- \* Atsugi
- \* Hardy Barracks
- \* Camp Zama
- \* Camp Fuji

### **COMNAVFORJAPAN**

- \* Yokosuka Area
- \* Sasebo Area
- \* Iwo Jima (When US Forces deployed)
- \* Iwakuni Area

# Conditions of Readiness

**TCCOR 4 - winds of 50 knots or greater possible within 7**  
- this is the time to obtain emergency supplies...

**TCCOR 3 - winds of 50 knots or greater possible within 48**  
- fill vehicle and propane tanks, ensure sufficient \$\$ on hand

**TCCOR 2 - winds of 50 knots or greater anticipated within**  
- secure outside items...

**TCCOR 1 - winds of 50 knots or greater anticipated within**  
- move sensitive items away from windows...

# Conditions of Readiness

**Modified TCCOR 2** - winds of 34-49 knots are anticipated with  
- secure outside items...

**Modified TCCOR 1** - winds of 34-49 knots are anticipated with  
- move sensitive items away from windows...

**TCCOR Caution** - winds of 34-49 knots are occurring  
- all non-essential travel suspended, non essential personnel

**TCCOR Emergency** - winds of 50 knots or greater are occurring  
- all personnel stay indoors away from windows...

**TCCOR Recovery** - winds of 50 knots or greater are **NOT** forecast  
- stay indoors while damage assessment and cleanup is accomplished

**All Clear** - the threat of severe weather is over  
- resume normal activities...

# Required Reports

## AT SEA

### **SYNOPTIC WEATHER OBSERVATIONS**

- When within 300NM of a tropical cyclone or TCFA area, send via IMMEDIATE precedence every 3 hours

### **TYPHOON EVASION SITREPS**

- Sent when experiencing 35KTS/12 FT seas due to a tropical cyclone, or when within the 24-hour danger area.
- Sent via IMMEDIATE precedence every 6 hours

### **MOVREPS**

- Submit updated MOVREP when accepting OTSR Divert Recommendation.
- Every 24 hours if evading storm:
  - submit updated MODSTM MOVREP per NWP 1-03.1



# Required Reports (con't)

## SHIPS INPORT AND SHORE ACTIVITIES

### **COR STATUS REPORTS**

- Sent by CFAY and SOPA to appropriate Chain of Command when a higher Condition of Readiness is set

### **TROPICAL CYCLONE ADVISORY**

- Sent by NAVPACMETOCCEN Yokosuka every 6 hours at intermediate synoptic times
- Provides forecasted CPAs and local area weather expected from the tropical cyclone

# Summary

- **NEVER** cross the “**T**” of a tropical cyclone
- Most dangerous winds typically in right front quadrant
- Add **120NM** to **24 hr** 35 KT wind radius for danger area
- Transmit 3-hourly obs, 6-hourly sitreps when affected by a tropical cyclone
- **Yokosuka** is **primary** WESTPAC typhoon haven. Sasebo is second (except for large ships)
- Re-curving storms have greatest forecast errors
- Though multiple sources of data are available, **JTWC** is the **official** forecast for the U.S. Navy

There are no normal peacetime operations of greater importance than the avoidance of



# ***REFERENCES***

- USCINCPACINST 3140.1W
- CINCPACFLT OPORD 201 ANNEX H
- COMSEVENTHFLT OPORD 201 ANNEX H
- NAVOCEANCOMINST 3140.1K
- NAVOCEANCOMINST 3144.1D
- TYPHOON HAVENS HANDBOOK FOR THE WESTERN PACIFIC AND INDIA OCEANS, NAVENVPREDRSCHFAC TP 5-76
- USFJINST 32-1/COMFLEACTINST 3140.1S
- HEAVY WEATHER GUIDE/AMERICAN PRACTICAL NAVIGATOR VOL 1
- MARINERS WORLDWIDE CLIMATE GUIDE TO TROPICAL STORMS AT SEA NAVAIR 50-1C-61

# ***NAVPACMETOCCEN Numbers***

Commanding Officer 243-5270

Operations Officer 243-7882

Mobile Environmental Team Officer

243-7849

Command Duty Officer 243-5595

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